

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Improving Public Safety Communications)	
in the 800 MHz Band)	WT Docket 02-55
)	
Consolidating the 900 MHz Industrial/Land)	
Transportation and Business Pool Channels)	

**COMMENTS OF THE PUBLIC
SAFETY IMPROVEMENT COALITION**

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SUMMARY

The Public Safety Improvement Coalition reiterates its earlier view that 800 MHz public safety radio systems should not bear any of the costs associated with relocation or retuning, including expenses attributable to concomitant new regulations such as those contained in Appendix F of the Consensus Parties' Supplement. With that principle in mind, we have reason to believe that the \$700 million committed by Nextel to public safety spectrum realignment may not be sufficient. For a region to miss reassignment because the money runs out is unacceptable. Because Nextel insists that its contribution be capped, some backstop funding -- preferably public -- must be found in case the amount is insufficient to the many complicated tasks involved.

We believe that the scope of the tasks to be compensated by the fund is unclear, particularly as to reimbursement for such "consequential" public safety expenses as expanding sites to meet new signal level requirements or changing out equipment to meet new standards of signal discrimination. The larger problem is the trade of Nextel relocation funds for new Nextel spectrum. The potential inadequacy of those funds may be, even at this late hour, a reason to break a link that is under serious attack from Nextel's competitors.

The implementation of the Consensus Parties' plan would be in a few private hands and sorely lacking in public oversight. At a minimum, one or more seats on the proposed Relocation Coordination Committee should go to persons disinterested in the plan.

Appendix F places disproportionate burdens on public safety systems to raise their signal levels and improve their equipment if they expect to be eligible to complain about future interference. There are no commensurate preconditions on CMRS providers. The time has come for commercial carriers to engage in prior coordination with public safety systems.

The downshift in the spectrum for NPSPAC channels raises at least two major concerns. The first is the disparity in border and non-border band plans and the inability of public safety radios to switch seamless between the two plans. The second is the potential disabling of vehicle repeater systems that rely on greater spectrum separation in upstream and downstream channels than would be possible under the proposed new proximity of NPSPAC and conventional channels.

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Anne Arundel County, Maryland; Greater Metro (Denver) Telecommunications Consortium (“GMTC”); the District of Columbia Office of Chief Technology Officer (“OCTO”); Fauquier County, Virginia; Osceola County, Florida; City of San Diego; and County of San Diego (hereafter, “Public Safety Improvement Coalition” or “PSIC”) submit these Comments on the Supplement of the self-styled “Consensus Parties” (“CP”), filed December 24, 2002 in the captioned proceeding.¹ PSIC’s supplemental comments first address questions of funding and implementation process that are left unresolved or unclear in the Supplement, then move to technical concerns of special interest to one or more members.²

¹ Public Notice DA 03-19, released January 3, 2003; time extended by Order, DA 03-163, released January 16, 2003. Twelve local government members of PSIC filed Comments and Reply Comments in this proceeding on May 6th and August 7, 2002, respectively. GMTC is a board of local government representatives comprised of 28 communities in the greater metropolitan Denver, Colorado area.

² The San Diego jurisdictions’ special concern for the consequences of realignment and new technical rules on the Mexican border is treated in their separate joint comments and in the comments of the Border Area Coalition, both filed today.

Funding

Adequacy. Despite the addition of \$350 million to the \$500 million originally proposed by Nextel, we and other public safety and B/ILT licensees to whom we have spoken remain uncertain whether even the new amount will cover all the potential liabilities. It is no answer to state that a given public safety region need not begin the realignment process if funds to complete the relocation/retuning are not available. (Supplement, 7) This only avoids an unfunded liability; it does not meet the goal of eliminating or mitigating CMRS interference to public safety radio systems in that region. To the contrary, it raises the new problem of unreconstructed regions that would be incompatible with realignments in the balance of the country -- most importantly, neighboring regions. This is not feasible for the efficient operation of public safety systems. These require seamless interoperability, particularly in mutual aid situations and during other emergency responses that cross boundaries and regions.

Thus, any cap on funding is unacceptable if funds run out or become unavailable. Nextel responds plausibly that it cannot saddle its shareholders with an open-ended liability.³ The company quickly adds, however, its confident assurance that the \$850 million will be more than sufficient and is joined in this declaration by the other CPs.⁴ Public safety has stated from the beginning that they should not bear any of the costs associated with 800 MHz rebanding. The members of PSIC still hold firm to this principle.

³ Nextel representatives made this statement to undersigned counsel in a meeting January 30, 2003.

⁴ Of the total, \$700 million is estimated for public safety relocation/retuning, \$150 million for other licensees subject to the CP plan. (Supplement, 5-6)

Public safety organizations within the CP qualify their support to the extent of an uncertainty over how many radios may need to be replaced rather than retuned.⁵ It is not clear from the discussion in the Supplement whether the allowance of \$700 million for public safety conversion -- against the estimate of \$698.6 million required (Appendix A-8) -- would provide sufficient cushion.

Special NPSPAC Expenses. The channel plan for the current NPSPAC assignment is different from that proposed for new NPSPAC spectrum: 25-kHz bandwidth channels with a separation of 12.5 kHz between channels versus 25-kHz bandwidth channels with a separation of 25 kHz between channels. Therefore, the radio software that maps each channel number to its frequency needs to be redone. The mapping table could be expanded so that each offset channel within the band is addressable. This would require more memory dedicated to this table. Or the table itself could be modified. Both cases require some software development, followed by upgrade of the infrastructure equipment software and the radio software.

The analysis provided in the Supplement's Appendix A does not identify the expenses involved in such upgrades, nor address who would be responsible for the cost of the development that each single radio vendor would have to undertake.

Consulting Fees. Since the cost estimates include such detailed entries as frequency coordination at \$190, we assume much more expensive tasks -- such as outside consulting fees

⁵ In their separate joint comments filed today, the San Diego entities raise a radio reprogramming/replacement concern related to the downshift of NPSPAC channels in the spectrum to a new location where, on the Mexican border, offset (or "splinter") channels are used. The question is whether radio systems can be programmed to recognize both conventional and splinter channels. If this is covered in Appendix A, we have not found it. The issue could be important to any heartland (non-border) location where conventional and splinter channels might be mixed.

and internal resources required of the agency being retuned -- have been considered. However, this does not appear to be the case. In the cost estimates for retuning, consulting fees of \$5,000-10,000 are shown in all categories regardless of the extent of retuning.⁶ For instance, a retuning of a Motorola trunking system that requires all control channels to be changed is significantly more labor-intensive than a trunking system that only requires retuning of the voice channels. Retuning voice channels does not necessarily require all subscribers to be reprogrammed, whereas the previous scenario does.

Section IV of the Supplement calls for expenses of the Relocation Coordination Committee (“RCC”) and its subsidiary Phase I and Phase II Committees, as well as dispute resolution costs, to be met by the \$850 million fund. If these are already included in Appendix A, well and good; if not, they could eat up a sizable chunk of the roughly \$22 million combined cushion provided for public safety and non-public safety conversions.

Scope. It is not clear from the Supplement whether public safety systems are to be reimbursed for relocating “as is,” or whether additional expenses caused by the moves or the proposed technical requirements also will be compensated. For example:

- According to the Supplement, existing systems must be capable of delivering –98 dBm minimum signal level (existing systems) and –95 dBm level (new systems) at street level in order to be protected from CMRS interference. Many existing public safety radio systems have been in operation years before the proliferation of CMRS systems created the interference situation. These systems do not necessarily deliver this level of signal since they are analog and analog systems do not require this higher signal level.

⁶ \$10,000 represents little more than 80-100 hours of consulting services. This is not our experience in the public safety or utility environment. This type of work is usually handled by outside resources and there are none shown in the cost estimates. \$10,000 is ridiculously low for such an undertaking.

In their cost estimate, have the CP considered the costs associated with existing agencies and incumbents having to build additional tower sites and expand their systems in order to meet the new signal level?

- What about retuning considerations for systems that cannot expand their coverage footprint due to short-spaced co-channel licensees? Do the cost estimates include retuning agencies that currently operate on channels that cannot be expanded owing to this limitation?⁷ If the constraint means that systems cannot meet the signal level requirements of Appendix F, they become ineligible for mandatory redress of future interference.
- Have cost estimates considered the critical nature of public safety systems and their need to be able to retune with no reduction in system capacity, system reliability and system availability? In order to fully understand the assumptions made by the CP, we suggest they provide a technical description of how a control-channel retuning takes place under their cost estimates.⁸
- Do cost estimates include the costs associated with upgrading or replacing existing agency equipment in order to meet the proposed receiver standards in Appendix F?

Security. The actual cash to be deposited in escrow by Nextel begins at only \$25 million. Future deposits would be secured by 10 MHz of 1.9 GHz replacement spectrum that Nextel hopes to gain under the plan and by 700 MHz Nextel licenses said to be valued at \$354 million. This security is highly contingent and unreliable. Nextel has reserved the right to replace the spectrum security with "cash or cash equivalents." (Supplement, 8, note 9) We suggest the escrow be cash or cash equivalents in the first place. To the extent the escrowed money earns interest, the interest could be applied to relocation/retuning and associated expenses or returned to Nextel, along with any unspent principal.

⁷ Simulcast systems require all channels to have the same performance parameters across the entire coverage area. If some subset of the channels are not expandable, their system is not expandable.

⁸ We do not see how this can occur without temporary construction of a parallel system. This would mean that any simulcast trunking system currently operating in the NPSPAC band would require parallel system retuning.

A Larger Problem. At the risk of stating the obvious too late, we believe the Nextel proposal at the core of the CP plan has suffered from its trade of relocation money for new Nextel spectrum. We do not fault Nextel for attempting to cut through the mounting difficulties of case-by-case mitigation that characterized 800 MHz problem-solving through 2001. We cannot help but wonder, however, if some lesser portion of the money it is now offering could have been better spent by earlier attention to local remediations -- not just by Nextel but by other commercial providers identified as interfering with public safety radio systems. And the FCC, admittedly resource-constrained, still might have intervened earlier with more help.⁹

There may still be time to de-link the cost of spectrum realignment from new spectrum for Nextel, but this would require some buy-in from other sources of 800 MHz interference to public safety, such as Cingular, and/or a public mechanism for permanent, renewable funding to solve or alleviate the problem.

Implementation: The Need for Public Oversight

To their credit, the Consensus Parties have responded in detail (Supplement, Appendices C and D) to the FCC's request for information about how any 800 MHz realignment would be implemented. With \$850 million at stake, one can imagine that Nextel most of all, and APCO and ITA as well, would like to control the implementation process. But there is an element of public oversight missing from this picture.

⁹ Anne Arundel County's less than fulfilling experience with the FCC is recounted on the record of WT Docket 02-100, where another interfering CMRS provider, Cingular, has sued the County over a wireless siting ordinance that emerged as a last resort to address no fewer than 61 dead spots of half-mile diameters around Nextel and Cingular sites. From its 1998 examination of the problem until the issuance of the Notice here, the FCC maintained that the County's problem was old, poorly-filtered public safety radios. The County has demonstrated that its problems persisted using the best radios available, and the Notice suggests the FCC finally realized this.

A private body, the LMCC, would nominate four of the five members of the key Relocation Coordination Committee (“RCC”). Two of the nominees would be from a category called Public Safety. As we look at the LMCC membership, the likely nominees would be APCO and IAFC. Two others would represent all “private wireless” licenses. Presumably, one of these would be ITA. Nextel would be the 5th RCC member.

The FCC has a big job in granting, administering and monitoring the use of radio licenses. It has delegated considerable authority to frequency coordinators to assist in this process. The agency uses advisory committees as well. In the end, however, only the FCC can make the decisions. It can accept licenses filed by frequency coordinators, but the agency must have the final word. Similarly, the recommendations of advisory committees are just that -- advice, not final action.

Why should the LMCC nominate the RCC? Why couldn’t the FCC call for nominations from the public, just as it does for certain advisory committee memberships? The agency could reserve one or more seats for parties who are not so involved in the CP plan.¹⁰ The importance of balancing the RCC membership is highlighted by the CP proposal to staff other implementation tasks through the RCC. For example:

- ❑ “The RCC would, as one of its first actions, prioritize the 55 NPSPAC regions for realignment relocations in descending order of population as modified to give relocation priority to those Regions with the greatest incidence and severity of CMRS-public safety interference.” (Supplement, IV, 16)

One might agree with the sample prioritization at Appendix E, yet be loath to give final authority to the RCC.

¹⁰ Most all the signers of the Supplement are LMCC members.

- ❑ A Phase 1 Planning Committee consisting of a public-safety certified frequency coordinator, a B/ILT certified frequency coordinator and Nextel would be appointed by the RCC.

The proposal that the Committee act by “consensus” needs some elaboration. Does consensus mean unanimity, or majority? In the former case, public safety entities might be comforted to have an APCO veto in reserve, and others might be reassured that a B/ILT representative would have the same power. Conversely, they might be discomfited by a Nextel veto.

We put this question to CP representatives recently.¹¹ The representatives explained that consensus was intended as majority, precisely to avoid a single party’s veto. Not every majority is equal, however. On the five-member RCC, a 4-1 vote would represent consensus, a 3-2 vote would not. While on the merely three-member Phase I and Phase II Committees, 2-1 would constitute consensus.

- ❑ Ultimately, the Phase 1 Committee “would certify to the Commission the clearing plans” for the licensees scheduled to move out of the lower bands that will become the new NPSPAC home. The FCC would not be asked to approve the plans, however. Instead, negotiations would ensue under the plans and, when completed, would result in the filing of license applications for the new frequencies. Any challenges to the plans would have to wait until then.

Presumably this is meant to save time by not allowing disputes over individual frequency swaps to hold up plan execution. On the other hand, why should parties even begin to negotiate under a flawed plan? How will we discover flaws in the plan if it is never ventilated through the FCC approval process?

- ❑ Unsuccessful negotiations would go to binding arbitration. The RCC would choose the arbitrators. Arbitration costs money. According to the CP, such costs would be paid by the RCC -- ultimately from the Relocation Fund.

¹¹ Meeting, note 3, *supra*.

- ❑ A Phase II Planning Committee to oversee the NPSPAC licensee relocations again would be appointed by the RCC, to consist of a public safety frequency coordinator, NPSPAC regional reps, and Nextel. The Committee would be only three persons for any given action, since the NPSPAC regional members would only participate on matters affecting their region. This regional effort will cost money. The RCC would disburse grants on request from Relocation Funds.

Absent agreement between the NPSPAC licensee and Nextel, the parties would go to mediation, then arbitration, with LMCC and the RCC wielding considerable influence over selection of mediators and arbitrators.

In short, this is a process in a few private hands, most likely APCO, ITA and Nextel. It needs a level of public scrutiny and phased approval by the FCC if it is to gain ultimate trust and acceptance. Even if this scrutiny costs time, the expense is likely to be worth it in the final result.

Appendix F

The CP suggestions for “post-alignment interference mitigation” have been reviewed at some length in the separate comments filed today by the San Diego entities and the Border Area Coalition. We believe their views deserve close attention.

There is no mention of commercial power reduction in the Appendix, despite the Commission’s call for comment on the tradeoffs among commercial and public safety signal levels, public safety receiver discrimination, number of public safety base stations, and other factors.¹² This is a serious omission, and it cannot be answered simply by promises that

¹² Notice of Proposed Rulemaking, FCC 02-81, released March 15, 2002, ¶77). (“The corollary to the interference solution [of more robust public safety signals] is that interference -- particularly overload interference -- could be mitigated if the signal of the CMRS station were reduced.”)

commercial providers will reduce power upon complaint, after the fact. We are looking for thresholds and presumptions that will shorten the protracted and exhausting case-by-case remediation that has characterized regulatory practice for too long.

Prior Coordination of Commercial Sites. The best antidote to *post hoc* mitigation is for CMRS providers to coordinate in advance their new installations and upgrades with potentially affected public safety systems. The closest Appendix F comes to this approach are references to “best practices” in which such prior coordination is recommended but not mandated. It is time to make such pre-planning mandatory for commercial wireless providers.

The Commission recently adopted preventive measures with respect to future public safety spectrum uses at 700 MHz that are pertinent to the issues in the referenced proceeding. In a Third Memorandum Opinion and Order resolving certain petitions for reconsideration in WT Docket No. 99-168, the FCC wrote:

[W]e establish “mandatory coordination zones” near public safety base stations, within which commercial base station operators will be required to coordinate their operations with public safety licensees. This will establish an anticipatory, rather than reactive, process for controlling interference to public safety operators in the upper 700 MHz band.¹³

While the action does not extend, by its terms, to commercial interference to public safety radio at 800 MHz, the concept of an “anticipatory process” for interference control is equally applicable to all local governments attempting to work with wireless carriers to mitigate the threat to life and property protection.

¹³ FCC 02-204, released July 12, 2002, ¶1.

The Commission adopted the mandatory coordination zones in the upper 700 MHz band while rejecting petitioners' calls for a "zero tolerance" approach to commercial interference to public safety. The order hesitated to delegate broadly "to an interested party or parties" the presumption that a "noise floor" increase signified intolerable commercial interference.

Nevertheless, the Commission continued:

Although we have not considered whether such an approach comports with the statutory mandates to enable commercial services as well as protect public safety services, such a method for protecting public safety operations may deserve Commission consideration if more thoroughly developed.¹⁴

Clearly, the time is ripe for CMRS prior coordination with public safety systems, and this proceeding is a good place to add to the tentative steps taken at 700 MHz. Prior coordination will help to insure that public safety gains the full measure of protection from realignment.

Vehicular Repeater Systems. Both Anne Arundel and OCTO are concerned about the effect on use of vehicular repeater systems ("VRS") when NPSPAC channels are shifted down to the same spectrum inhabited by non-NPSPAC public safety uses. VRS are mobile stations that can be set up at or near the scene of an incident, such as an office building fire, to make sure that, for example, tactical communications with firefighters are not lost because their portables are out of range of conventional network signals.¹⁵

Futurecom, the vendor used by both the County and the District, came up with a filter and design technology that allowed the same 800 MHz portable to be used in place of the UHF portable. It requires an antenna on the vehicle front and one on the rear, which provides approximately 30 dB of isolation. The additional isolation is provided by the duplex filtering.

¹⁴ FCC 02-204, ¶27, n.45.

¹⁵ Additional details are found in the Attachment.

The County has accomplished this separation in the past by using the NPSPAC band (821/866-824/869 MHz) for one transmission in the two-way communication and the 806/851-815/861 band for the other.

The problem comes into play when the band is reconfigured as part of the CP plan. Public safety agencies vacate the 821-824 NPSPAC band and relocate to the 851-854 band. In addition, Nextel relocates all Public Safety/general entities in the proposed guard band at 859-860 and uses this guard band for system that are not vulnerable to external cell site interference such as in-building or campus systems. These guard band channels would not be available to VRS applications for obvious interference exposure.

This isolates from commercial users -- as was intended -- a large, continuous high-site technology band from 851-858 MHz. The CP plan would place all new channels in the low 854 to the mid-856 MHz segment. However, the County and other similarly situated VRS users now cannot maintain the required 5 MHz of channel separation. A PSIC representative has asked the CP to look into this problem and they have agreed to do so.

The CP plan states that “no public safety agency will be required to relocate without full compensation.” Under the circumstances described above, we believe compensation must include a workable VRS or a comparable alternate method of assuring system coverage.

Radio Programming Issues. The proposed relocation of NPSPAC channels to a different part of the 800MHz band may create a problem with reprogramming existing radios. Difficulties have already been encountered by system users that operate in both border and non-border band plans.

In Motorola Smartzone networks, a public safety responder’s radio cannot seamlessly switch between base stations that use different plans. This problem has been the greatest for

users operating in areas about 70 miles from the border. Reallocation of the NPSPAC channels as proposed in the CP would require public safety users to manually switch the radio "personality" to the plan for the site in the current coverage area. This is unacceptable when an emergency situation exists and the need for manually switching radio equipment arises and causes a delay in the ability to use the radio.

Motorola Smartnet systems pose an even greater problem in that the system uses only one pool of channels for voice traffic assignment. The pool of available channels must all be within the same plan. No mixing of border and non-border channels can be accommodated. Thus all channels must be within the same 25 kHz plan.

Discussions with Motorola in the past have indicated that solving this problem is a major effort and would involve firmware / software changes for all models of all 800 MHz radios and network controllers in use and for all versions of the firmware and software in use. Thus, the initial cost of Motorola development and the cost to perform firmware /software and flash upgrades for all radios likely to be used in the border area should be included in the cost to implement this plan. Many radios in use in public safety systems have not been in production for several years and may not have been considered in the determination of these firmware upgrade requirements.

CONCLUSION

For the reasons discussed above, the CP plan is unacceptable and should be modified in accordance with our suggestions and those expressed separately by PSIC members such as San Diego City and San Diego County.

Respectfully submitted,

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Why Vehicle Repeater Systems (“VRS”) Are Important

The vehicular repeater available today is an in-band 800 MHz repeater. Vehicular repeaters of the past were essentially cross-banded, which meant that the vehicle required a mobile radio in one band, say 800 MHz as you have today, and a portable in an alternative band such as VHF or, most frequently, UHF 450 MHz. When the portable user left the car, he or she activated the repeater and took the UHF portable out of the car and placed it at the hip. When the user was away from the vehicle, the UHF portable would talk to the UHF-half of the repeater, which was hard-wire interfaced to the 800 MHz mobile, which in turn talked to the system. This was problematic, requiring the portable in a different band.

Many public safety agencies cannot afford to build a communications system that will penetrate above-ground floors in buildings within their service areas. Even when additional tower sites are constructed, they cannot deliver reliable communications below ground level, where the presence of utility services/switch gear creates one of the greatest potentials for fires. The VRS unit will deliver this capability and can do so effectively with the current 800 Mhz channel plan that allows PS entities to operate in both the 806 and 821 Mhz bands.

The VRS unit is unique since it is an in-band repeater and can operate in the 800 Mhz band as long as there is 5 Mhz channel separation between the public safety agency’s main communication system and the conventional 800 Mhz channel pair utilized by the VRS. The unit requires 30 dB isolation from the two antenna systems required. The remaining isolation is provided by the duplexer filtering.

Public safety agencies have other alternatives. One option is to use “talk-around” or portable-to-portable communications-on scene. This can provide a fairly reliable communications link (as long as a second person is on-scene to talk to), although the communications that take place will not provide these critical features:

- No Logging of transmissions on the agency’s voice recording system. When the field commander must go to portable talk-around operations, not only will wide-area communications be lost but the ability to record these portable transmissions is lost as well. The VRS configuration ensures that, for example, fire ground operation transmissions can continue to be recorded.
- Limited range with portables as compared to VRS operation. Two portables within the same building will usually have more difficulty communicating than in the VRS configuration, where each portable only has to reach the VRS and can do so with less penetration loss.
- No emergency feature with portable-to-portable operations. With the VRS configuration, all emergency personnel continue to possess the ability to activate the emergency button on the portable that will notify all personnel an officer requires assistance. The on-scene commander is provided with the Unit ID of the initiating officer.